INSECTS OF MICRONESIA

Coreidae (Alydini by J. C. Schaffner), Neididae, and Nabidae[1]

By GORDON F. GROSS
SOUTH AUSTRALIAN MUSEUM, ADELAIDE

INTRODUCTION

This report includes the Coreidae, Neididae, and Nabidae of Micronesia. In the Coreidae, the whole section on the tribe Alydini in the Alydinae and the corresponding part of the distribution table are contributed by J. C. Schaffner; I (G. F. G.) am responsible for the remainder of the paper.

The collections studied were made by Kyushu University, Japan, from 1936-1940; by Bernice P. Bishop Museum in 1936; by United States military personnel from 1944 to 1946 and by collectors for the Pacific Science Board and the National Research Council from 1947 to 1954. New material was added by Brown and Tuthill in 1956, Sabrosky in 1957, and Gressitt in 1958.

The United States Office of Naval Research, the Pacific Science Board (National Research Council), the National Science Foundation, and Bishop Museum have made this survey and publication of the results possible. Field research was aided by a contract between the Office of Naval Research, Department of the Navy and the National Academy of Sciences, NR 160-175.

Specimens are in the collections of Bishop Museum (BISHOP), Kyushu University (KU), and Chicago Natural History Museum (CM). Several specimens were retained for the South Australian Museum collections. I

[1] This represents, in part, Results of Professor T. Esaki's Micronesian Expeditions (1936-1940), No. 118.

DISTRIBUTION LIST OF MICRONESIAN COREIDAE, NEIDIDAE, AND NABIDAE

	Micronesian Island Groups											
				Caroline								
	Bonin	N. Mariana	S. Mariana	Palau	Yap	Caroline Atolls	Truk	Ponape	Kusaie	Marshall	Gilbert	Other Localities
Coreidae												
Rhopalinae												
1. Liorhyssus hyalinus	×	×	×	×	×	×				×	×	Almost cosmopolitan
2. Leptocoris vicina			×	×	×	×						Indonesia, Philippines
3. L. rufomarginata				×				×				Orient, Philippines, Indonesia, Solomon Is., New Guinea, Queensland, Fiji, Samoa, Tonga
4. L. tagalica			×									Indonesia, Philippines, New Hebrides, Samoa, Tahiti, Australia
5. L. isolata										×		New Guinea, Solomon Is.
Alydinae												
6. Leptocorixa acuta	×	×	×	×	×		×					Orient, Indonesia, Philippines
7. Noliphus erythrocephalus				×								New Guinea, north Australia, Indonesia
8. Melanacanthus margineguttatus			×									Australia, New Zealand, Pacific islands
9. Riptortus saileri										×		
10. R. macleani*				×	×							Philippines
Coreinae												
11. Acanthocoris scaber			G†									Java, China
12. Leptoglossus australis		×	×	×				×				Africa, Orient, Pacific islands, Australia
13. Dasynus fuscescens				×								North Australia, New Guinea
14. D. pallidolimbatus*				×								
15. Plinachtus acicularis			×									India, Ceylon
Neididae												
16. Protacanthus pacificus				×								Samoa, Fiji
Nabidae												
17. Arbela nitidula				×								Ceylon, India, Philippines, Japan, Indonesia, New Guinea, New Hebrides
18. A. hibisci				×				×				
19. Nabis capsiformis	×		×	×	×	×	×	×		×	×	Cosmopolitan
20. N. fasciata				?								

* Described as new.
† Guam only.

wish to express my thanks to Dr. Gressitt and Miss Nakata of Bishop Museum who arranged for this study.

ZOOGEOGRAPHY

The distribution of the species of these three families follows much the same pattern as for other families of Heteroptera in Micronesia. Common species in Polynesia, which may also, but not necessarily, be common in the lands south (New Guinea and North Australia) and west (Indonesia, Philippines, and the Asian mainland) of Micronesia are usually present and well scattered over the island groups. In this category are *Liorhyssus hyalinus, Leptoglossus australis,* and *Nabis capsiformis.* Lands to the west have a strong influence on the fauna of the South Mariana and Palau Islands. Western-derived elements include *Leptocoris vicina, L. acuta, Acanthocoris scaber,* and *Plinachtus acicularis.* Lands to the south have a strong influence on the fauna of the Palau Islands again and the Marshalls. Elements of southern derivation include *Leptocoris isolata, Noliphus erythrocephalus,* and *Dasynus fuscescens.* Elements which may have come from either south or west are *Leptocoris vicina, L. tagalica,* and *Arbela nitidula.*

The Palau group has the richest fauna, presumably because of its close proximity to two source areas. It also has three of the four endemic species of the group, *Dasynus pallidolimbatus, Riptortus macleani,* and *Arbela hibisci. Protacanthus pacificus,* now recorded from the Palaus, was known formerly only from Polynesia. *Arbela hibisci* occurs also on Ponape. The Gilbert, Bonin, and Volcano Islands, the larger atolls of the Eastern Carolines (Kusaie and Ponape, for example), and the low Caroline atolls have the poorest fauna. What species do occur are usually common Pacific species, except *Leptocorixa acuta* on the Bonins which is of western derivation and may actually have been recently introduced.

SYSTEMATICS

FAMILY COREIDAE

Despite the large size of this family on a world-wide basis, the number of Micronesian species is small and the general picture is very similar to that found on other Pacific island groups. The subfamilies Rhopalinae and Alydinae are both fairly well represented (by comparison, the four coreids found in Hawaii belong to these two subfamilies). The subfamilies Pseudophloeinae and Agriopocorinae are absent and the Coreinae is comparatively poorly represented. In the Coreinae, the tribes Physomerini, Pendulini, Gonocerini, and Anisoscelini are the only ones represented; larger coreines of the tribes Amorbini, Mictini, Petascelini, Homoceerini, Cloresmini, and Hygiini,

which are very common on the more continental island groups to the southeast, south, and west of Micronesia, are absent.

The three subfamilies of Micronesian coreids can be separated by the following key.

KEY TO SUBFAMILIES OF MICRONESIAN COREIDAE

1. Odoriferous orifices distinct, on the dorsal surface base of abdominal segments 4 and 5 sinuate.......2
   Orifices rarely distinguishable, but if they are, then placed between hind acetabula.......**Rhopalinae**
2. Bucculae generally long and extending behind insertion of antennae.......**Coreinae**
   Bucculae short, placed wholly in front of insertion of antennae.......**Alydinae**

SUBFAMILY RHOPALINAE

The Rhopalinae in Micronesia are represented by the two widespread genera *Liorhyssus* Stål and *Leptocoris* Hahn. The two genera may be separated by the following key.

Hemelytra more or less transparent. Mostly small yellowish species about 5 mm. in length.......**Liorhyssus**
Hemelytra opaque, membrane black. Larger species, 12-29 mm., reddish or reddish ochraceous, often markedly infuscated with black.......**Leptocoris**

Genus **Liorhyssus** Stål

Corizus (*Liorhyssus*) Stål, 1870, K. Sven. Vet.-Akad. Handl. **9** (1) : 222; 1872, Öfv. K. Vet.-Akad. Förh. **29** (6) : 55; 1873, K. Sven. Vet.-Akad. Handl. **11** (2) : 97, 98.—Oshanin, 1906, Verz. Palaearkt. Hemipt. **1** : 220. —Baker, 1908, Canadian Ent. **40** : 243.—Oshanin, 1912, Kat. Paläarkt. Hemipt., 25.
Liorhyssus Zimmerman, 1948, Insects of Hawaii **3** : 44.
Colobatus Mulsant and Rey, 1870, Hist. Nat. Punaises France **3** : 137.

Segment 1 of antennae short, incrassated, not or very slightly passing apex of head, segment 4 longer than 3; head more or less narrowed behind eyes and moderately porrectly produced in front.

Pronotum raised from apex toward base, with scutellum coarsely punctate; hemelytra more or less transparent and venation strongly developed, membrane transparent hyaline.

1. **Liorhyssus hyalinus** (Fabricius). (Figure 1.)
   Lygaeus hyalinus Fabricius, 1794, Ent. Syst. **4** : 168.
   Corizus (*Liorhyssus*) *hyalinus*, Van Duzee, 1917, Cat. Hemipt., 120 (gives full synonymy up to this date).

Liorhyssus hyalinus, Cheesman, 1927, Ent. Soc. London, Trans., 156.—Van Duzee, 1935, B. P. Bishop Mus., Bull. 114: 316.—Zimmerman, 1948, Insects of Hawaii **3**: 45, fig.

Corizus (*Rhopalus*) *hyalinus,* Usinger, 1939, Sixth Pacific Sci. Congr., Proc. **4**: 313.

A variable species. Micronesian specimens yellowish or reddish fawn above with a fairly long pilosity. Pronotum and scutellum coarsely punctate with punctations on scutellum tending to lie in two longitudinal bands in some specimens. Humeral angles of pronotum always infuscated; always with two transverse sinuous black markings near anterior margin. In front of these, pronotum is raised as a transverse smooth fold before narrow raised anterior collar. Pronotum sometimes much more infuscated.

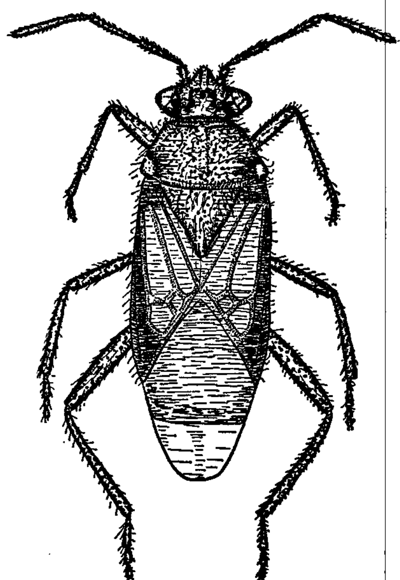


FIGURE 1.—*Liorhyssus hyalinus.*

Head with prominent black marks around ocelli; marks run onto tumescences which bear eyes and also run forward to join as a Y in front of eyes. Apical angle of corium reddish; a brownish, oblong-rectangular spot on hind margin of corium midway between apical angle and claval suture. Rest of hemelytra hyaline except for strongly marked brown veins. Antennae and legs strongly spotted with fuscous maculations, rest of underside usually pale. Length: 4.5-7 mm.

DISTRIBUTION: Almost cosmopolitan; Australia, Oceania, Micronesia.

BONIN IS. CHICHI JIMA: 10, Omura, "Camp Beach," May-June 1958, Snyder; one, Okumura, "Yankee Town," May-July 1958, Snyder; Sakaiura, "Bull Beach," May 1958, Snyder. OTOTO JIMA: One, Kammuri-iwa (Southwest Bay), July 1958, Snyder.

N. MARIANA IS. AGRIHAN: One, Aug. 1949, Mead; two, Aug. 1951, Bohart.

S. MARIANA IS. SAIPAN: One, Isely Field, on sugar cane, Aug. 1944, Hall; one, 1.2 miles east of Tanapag, Nov. 1944, one, Dec. 1944, Dybas; four, As Mahetog area, Nov. 1944, Edgar; four, Nov. 1944, Edgar; two, Dec. 1944, Edgar; one, As Mahetog area, Dec. 1944, Dybas; 55, Achugau area, Jan. 1945, Dybas; one, Sadog Talofofo, Talofofo area, Feb. 1945, Dybas; one, May 1945, Dybas; three, Chalan Laulau, Apr. 1946, Krauss; four, Garapan, Apr. 1946, Krauss; seven, U.S.C.C. farm, June 1946, Oakley; one, June 1946, Townes. TINIAN: One, March 1945, Dybas; five, Marpo Valley, June 1946, Oakley; two, July 1946, Townes; one, South end, June 1946, Townes; two, June 1946, Oakley; three, Nov. 1952, Beardsley; four, Lake Hageya, in swept grass, April 1946, Townes. GUAM: One, Ordot, on corn, May 1945, Bohart and Gressitt; one, Agana Spring, by sweeping, May 1945, Bohart and Gressitt; one, Agana Airport, Aug. 1945, Dybas; 17, Talofofo, Apr. 1946, Krauss; three, Mt. Alifan, Apr. 1946, Krauss; one, Agana Airport, June 1946, Townes; two, Agana Heights, July 1945, Wallace; one, Talofofo, Aug. 1952, Krauss.

PALAU. KOROR: One, March 1953, Beardsley; two, at light, March 1953, Beardsley; one, June 1956, McDaniel. PELELIU: One, July 1946, Townes; one, East coast, Jan. 1948, Dybas. ANGAUR: One, Jan. 1953, Beardsley.

YAP. MAP: South end, July-Aug. 1950, Goss. GAGIL: Five, Gagil District, July-Aug. 1950, Goss. YAP: Two, central Yap, July-Aug. 1950, Goss; seven, Kolonia, March 1954, Beardsley; one, Kolonia, Apr. 1954, Beardsley; 18, Ruul District, July-Aug. 1950, Goss; one, Ruul District, July 1956, McDaniel; 11, Oct. 1952, Krauss; one, Mar. 1954, Beardsley.

CAROLINE ATOLL. ULITHI: One, Falalop, Sept. 1956, McDaniel.

MARSHALL IS. ENIWETOK: Three, sweeping *Hibiscus,* Jan. 1951, Oshiro; one, sweeping *Scaevola,* Jan. 1951, Oshiro. ELUGELAB: Four, sweeping *ilima,* Jan. 1951, Oshiro.

GILBERT IS. TARAWA: Five, Betio, Aug. 1956, Brown; one, Bikenibeu, Nov. 1957, Krauss; 13, Ereket, Jan. 1957, Krauss.

This widely distributed species is rare in Australia; it is common in Micronesia and in Oceania where it is a common strand species (Usinger 1939).

Genus **Leptocoris** Hahn

Leptocoris Hahn, 1831, Wanzen. Ins. **1**: 200.

Antennal segment 1 a little shorter than head; ocelli slightly nearer eyes than each other, a very distinct nodule behind eyes; pronotum flattish, with a distinct anterior collar, lateral margins straight or slightly convex. Hemelytra of typical coreid form, membrane usually black.

Reddish, orange, or rarely yellow or cyclamen-colored bugs over 12 mm. in length.

The species of this genus from the Indo-Pacific region have recently been revised by me [South Australian Mus., Rec. **13** (4): 403-451, 1960]; a full list of references and synonymy of the genus is given there.

Key to Micronesian Species of Leptocoris

MALES

1. Parandria (posteriorly directed lobelike processes of penultimate segment of male genital capsule) roughly circular in cross section, narrowish........ .... **2. vicina**
   Parandria roughly semicircular in cross section with upper surface often slightly concave, wide........ 2

2(1). Parandria of pygophore as long as clasper, markedly concave on upper and inward surface; parameres fairly thin and not very elaborate........ **4. tagalica**
   Parandria not as long as claspers, less concave above........ 3

3(2). Parameres prominently hooked at apex, thence becoming broad and laminate before roughly circular basal part; produced ventral part of penultimate segment of pygophore (genital capsule) only vaguely triangular. Larger species (13-29 mm.)........ **3. rufomarginata**
   Parameres hooked at apex but narrowing between hooked region and base and not becoming laminate; produced plate of ventral part of pygophore elongate triangular, noticeably keeled. Smaller species (under 23 mm.).... .... **5. isolata**

FEMALES

1. Female genital capsule with upper pair of visible valves as clublike processes, but these clubs devoid of spines, smallish, and rounded with a long pilosity........ **3. rufomarginata**
   Female genital capsule with clublike processes as above but these clubs generally larger, always with prominent spines........ 2

2(1). Upper valves large club-shaped but not noticeably flattened on inner surface, fairly circular in cross section, spines always numerous........ .... **4. tagalica and 5. isolata**
   Upper valves generally not so large, noticeably flattened on inner side, outer and terminal parts moderately convex, giving a club-shaped impression .... **2. vicina**

2. **Leptocoris vicina** (Dallas). (Figures 2, *a*, *b*; 3, *a*.)

Serinetha vicina Dallas, 1852, List. Hemipt. Ins. 2: 460.—Distant, 1902, Fauna Brit. India, Rhynch. **1**: 420 (exclude reference to *coxalis*).

Leptocoris vicina, Gross, 1960, South Australian Mus., Rec. **13** (4): 422, figs.

Astacops nigricornis Walker, 1872, Cat. Heteropt. **5**: 36.

Serinetha longirostris Dallas, 1852, List. Hemipt. Ins. 2: 461.

Leptocoris carnivorus Usinger, 1946, B. P. Bishop Mus., Bull. **189**: 25, figs.

Purplish or yellowish red; long pilosity black, fine pubescence grayish. Pronotum sometimes infuscated posteriorad; also clavus and inner half of corium.

Distinguished by male capsule. Pygophore is thrown into two lateral lobes (parandria) which are round in cross section, with a long yellow pilosity. Claspers fairly simple, curved downward at apex and feebly concave on underside in terminal half. In basal half, undersurface changes inclination by 45 degrees, becoming broader and less concave. Ventrally, pygophore is produced posteriorad between claspers as a narrow lamina (hypandrium?) with its broad face in the perpendicular plane. Upper valvulae produced as two clublike processes which are flat on their inner surfaces and with numerous, fairly long spines on their outer surfaces and a few long hairs. Length: 12-15 mm.

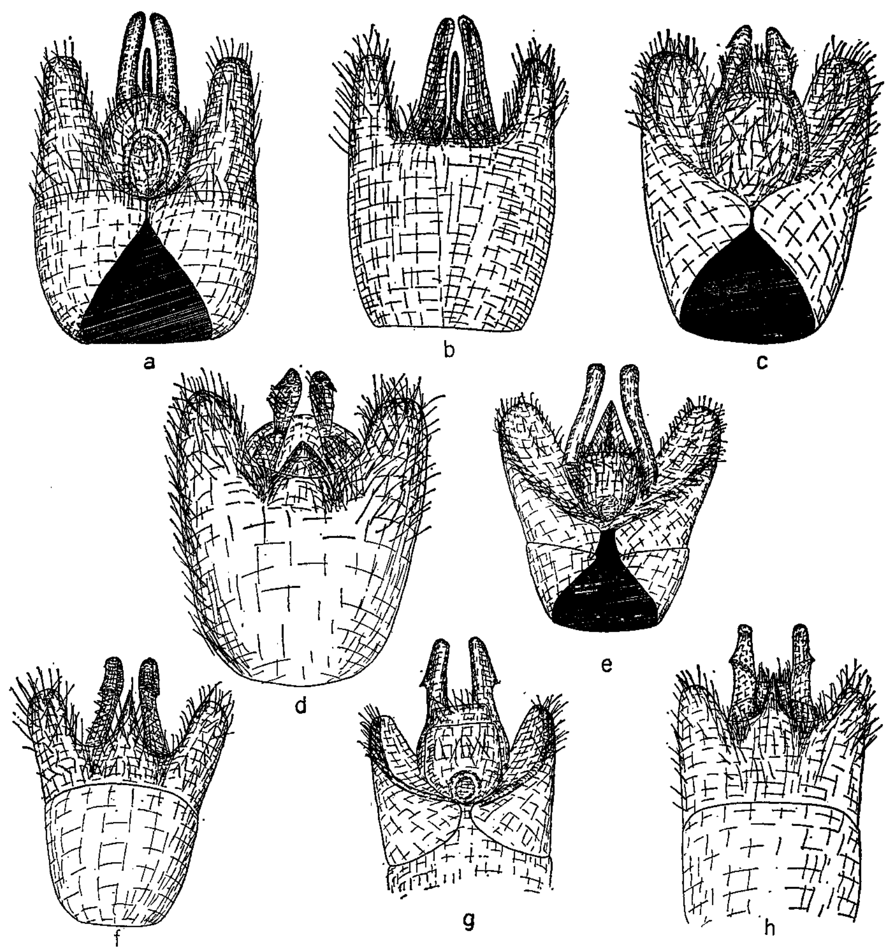


FIGURE 2.—Male genital capsule: **a,** *Leptocoris vicina,* from above; **b,** *L. vicina,* from below; **c,** *L. rufomarginata,* from above; **d,** *L. rufomarginata,* from below; **e,** *L. tagalica,* from above; **f,** *L. tagalica,* from below; **g,** *L. isolata,* from above; **h,** *L. isolata,* from below.

DISTRIBUTION: Indonesia, Philippine Is., Northern Territory of Australia, S. Mariana Is., western Caroline Is.

S. MARIANA IS. SAIPAN: Female, Afenia-Charanka, July 1939, Esaki. ROTA: Male, three nymphs, July 1952, Kondo. GUAM: Male and female (paratype of *L. carnivorus* Usinger), Cetti Bay, May 1936, Usinger; six males, female, Inarajan, on *Ficus* sp. and *Colubrina asiatica,* Sept. 1938, Oakley; female, no precise locality or date, Fullaway; male (paratype of *L. carnivorus* Usinger), Ritidian Point, June 1936, Swezey; three males, three females, beating vegetation, May 1945, Dybas, male, female, May 1945, Bohart and Gressitt, four males, six females, July 1945, Gressitt; two females, on beach, July 1945, Bohart and Gressitt; female, Aug. 1945, Gressitt; six males, three females, Point Oca, June 1945, Gressitt and Bohart, two females, 1 mile southeast of Asan, 180-240 m., Nov. 1947, Oct. 1949, Dybas.

PALAU. NGARIUNGS: Male, five females, Ngaiangl (Kayangel) Atoll, ex fern, Dec. 1952, Beardsley; male, same locality and date, Gressitt. KOROR: Male, limestone ridge, south of inlet, Jan. 1948, Dybas; female, Apr. 1954, Beardsley. PELELIU: Two males, three females, Mt. Amiangal, Dec. 1952, Gressitt; male with mutated genital capsule, east coast, July 1945, Dybas.

YAP. YAP: Female, Matade, near Yaptown, July 1946, Townes. RUMUNG: Three males, June 1957, Sabrosky.

CAROLINE ATOLLS. PULO ANNA: Male, female, nymph, Sept. 1952, Krauss. ULITHI: Falalop, two females, Oct. 1952, Krauss. WOLEAI: Falalis, two males, Sept. 1952, Krauss.

3. **Leptocoris rufomarginata** (Fabricius). (Figures 2, *c, d*; 3, *b*; 4.)

Lygaeus rufomarginatus Fabricius, 1794, Ent. Syst. **4**: 152; 1803, Syst. Rhyng., 220 (exclude reference to *stolli*).

Serinetha rufomarginata, Dallas, 1852, List. Hemipt. Ins. **2**: 460.—Stål, 1868, K. Sven. Vet.-Akad. Handl. **7** (11): 68.—Lethierry and Severin, 1894, Cat. Gen. Hemipt. **2**: 123.—Distant, 1902, Faun. Brit. India, Rhynch. **1**: 419.—Esaki, 1926, Mus. Nat. Hungarici, Ann. **24**: 157.

Leptocoris rufomarginatus Kirkaldy, 1905, Ent. Soc. London, Trans., 350.

Leptocoris rufomarginata, Gross, 1960, South Australian Mus., Rec. **13** (4): 432, figs.

Lygaeus taitense Guérin, 1830 (1838), Voy. Coquille, Zool. **2**: 178, pl. 12, fig. 15.

Serinetha fimbriata Dallas, 1852, List Hemipt. Ins. **2**: 462.

Lygaeus flavomarginatus Matsumura, 1913, Thousand Insects of Japan.

Leptocoris spectabilis Breddin, 1901, Allg. Zeitschr. Ent. **6**: 113-115. (*Typ. vid.*)

Leptocoris insularis Kirkaldy, 1908, Linn. Soc. New South Wales, Proc. **33**: 353.—China, 1930, Ins. Samoa **2** (3): 103.—Blöte, 1934, Zool. Meded. **17**: 257.

Leptocoris fimbriata, Blöte, 1934, Zool. Meded. **17**: 267.

Micronesian specimens mostly reddish ochraceous, with two elongate large longitudinal blackish spots on hind part of pronotum which are sometimes fused into one or absent; clavus and inner corium sometimes infuscated. Beneath black except underside of head, lateral margins of propleura broadly, mesopleura and metapleura (also upper hind margin of latter) and dorsal margins of abdominal segments broadly (except the sixth which is completely red or yellow) which are concolorous with pale color of above surface.

Easily distinguished from all others by shape of genital capsules. Male capsule has penultimate segment produced into two broad, lateroventrally flattened pilose

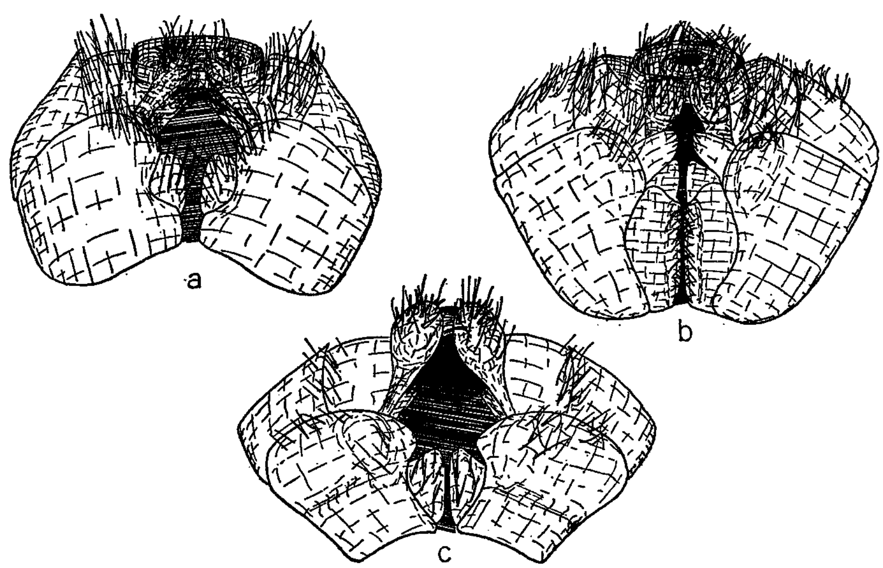


FIGURE 3.—Female genital capsule: **a**, *Leptocoris vicina*; **b**, *L. rufomarginata*; **c**, *L. tagalica*.

lobes which are feebly convex on ventrolateral surfaces and almost flat on dorsal interior ones. Ventrally, penultimate segment is produced between claspers as a triangular, short arched plate, directed upward at about 45-degree angle. Male claspers are quite elaborate, beginning basally with an almost triangular cross section, then become almost flat, broadish, and sinuate. Apically they turn ventrally and have a lateral hook on outer surface.

Female genital capsule has upper valves produced as club-shaped, very pilose processes which are flat (or even slightly concave) on inner surfaces as in most other species but these clubs are completely devoid of spines. Lateral and ventral pairs of valves are also quite distinct. Basal part of ventral valves are convex only near their inner margins and appear to give off membranous processes beneath, which protrude up under lateral valves. Length, 13-29 mm. (range of Micronesian specimens 20-25 mm.).

DISTRIBUTION: Thailand, Malay Peninsula, Nicobar Is., Indonesia, Philippine Is., Caroline Is., New Guinea, Solomon Is., Queensland, Fiji Is., Tonga Is., and Samoa Is.

PALAU: KOROR: Female, limestone ridge, south of islet, Jan. 1948, Dybas; female, Sept. 1952, Krauss; two males, two females (three from *Allophyllus* sp.), Dec. 1954, Beardsley; three males, Apr. 1957, Sabrosky. NGERKABESANG: Female, Apr. 1957, Sabrosky. URUKTHAPEL (Ngurukdabel): Female, Aug. 1953, Beardsley.

PONAPE. Female, Colonia-Jokaj, July 1939, Esaki; Nanue, female, June-Sept. 1950, Adams.

L. rufomarginata is extremely variable. It is the only large species found east of Indonesia (excepting the New Guinea race of *abdominalis*) but Micronesian specimens tend to be smaller than average and Polynesian specimens even more so.

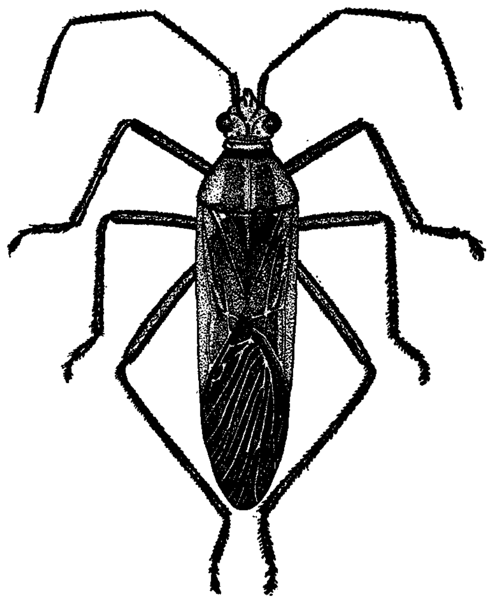


FIGURE 4.—*Leptocoris rufomarginata.*

4. **Leptocoris tagalica** Burmeister (figs. 2, *e, f*; 3, *c*).

Leptocoris tagalicus Burmeister, 1834, Acad. Leop. Carol., Nova Acta **16** (6), suppl.: 299.

Serinetha tagalica, Dallas, 1852, List Hemipt. Ins. Brit. Mus. **2**: 460.

Leptocoris tagalica, Gross, 1960, South Australian Mus., Rec. **13** (4): 439, figs.

Serinetha lurida Dallas, 1852, loc. cit., 461.—Distant, 1901, Ann. Mag. Nat. Hist. VII, **7**: 429.

Leptocoris vulgaris Bergroth, 1916, Roy. Soc. Victoria, Proc. **20**: 32.

Leptocoris taitensis Cheesman, 1926, Ann. Mag. Nat. Hist. IX, **18**: 369 (nec Guerin).

Leptocoris ahnnei Cheesman, 1927, Ent. Soc. London, Trans. **75**: 156.

Micronesian specimens generally deep chocolate brown with black head; abdomen beneath paler than ground color (several specimens are brick red).

Lateral margins of pronotum behind calli edged like a selvage and almost straight or very shallowly concave. Disc behind calli flat or almost so.

Male genital capsule with penultimate segment produced laterally into prominent pilose lobes convex on ventrolateral surface and noticeably concave and more pilose on inner dorsal surfaces. Ventrally, penultimate segment produced between claspers as a prominent triangular process. Claspers fairly simple, feebly hooked on their underside toward apex and turning somewhat ventrad. Claspers lack elaborate structure of *L. rufomarginata* and lateral lobes of penultimate segment are much longer in relation to length of claspers than in either *L. rufomarginata* species or in *L. isolata*. Capsule is generally the same color as the rest of insect but in specimens from Saipan and Tinian it is black.

Female genital capsule with upper valves produced into pilose, clublike structures with about 20 strong spines. Clubs flat on inner surfaces; lateral valves just perceptible as flat plates with a terminal pilosity beneath upper valves; ventral valves fairly convex. Length 9-13 mm.

DISTRIBUTION: Indonesia, Philippine Is., S. Mariana Is., New Hebrides, Samoa, Tahiti, Australia.

S. MARIANA IS. SAIPAN: Four males, Chalan Kanoa, on *Physalis peruviana*, Jan. 1949, Maehler; no precise locality, two males, four females, Jan. 1949, seven males, four females, Feb. 1949, Maehler; female, As Lito, Feb. 1958, Krauss. TINIAN: Two, Tinian Harbor, Mar. 1945, Dybas; two males, Apr. 1946, Townes.

5. Leptocoris isolata (Distant). (Figure 2, *g, h.*)

Serinetha isolata Distant, 1914, Ann. Mag. Nat. Hist., VIII, **13**: 179; 1920, ibid. IX, **6**: 148.

Leptocoris isolata, Blöte, 1934, Zool. Meded. **17**: 267.—Gross, 1960, South Australian Mus., Rec. **13** (4): 443, figs.

Leptocoris lariversi Usinger, 1952, Hawaiian Ent. Soc., Proc. **14**: 520, fig.

Ground color fuscous brown, reddish, or reddish ochraceous above. In infuscated specimens, lateral regions of head, anterior and lateral margins of pronotum, and outer base of hemelytra ochraceous, reddish ochraceous, or reddish. Antennae, membrane, and legs black or blackish brown. Calli on pronotum, usually scutellum, and sometimes a small quadrate area between eyes in otherwise not infuscated specimens, blackish or purplish. Anterior smooth areas of pronotum not quite transverse, convex. In infuscated specimens they are concolorous with fuscous center of pronotum, in others they range from red through bright purple and black and all stages may be seen in a series of specimens from any one locality. In front of these, pronotum is slightly raised into a narrow, shallowly triangular area which terminates laterally as two feeble pilose tumescences. Lateral margin of pronotum behind calli ovate, almost straight but with a feeble concavity just behind ocelli.

Male genital capsule not very distinct from that of *tagalica* and female capsules virtually indistinguishable. Male genital capsule has penultimate segment produced

laterally into prominent pilose lobes which are convex on ventrolateral surfaces and noticeably concave and more pilose on inner dorsal surfaces. Ventrally, penultimate segment is produced between claspers as a fairly prominent triangular process. Claspers more robust than those of *tagalica* and strongly hooked on their underside toward apex, somewhat excavated beneath at middle, turning somewhat but not markedly ventrad at apex. Claspers much longer in relation to parandria than those of *tagalica,* the one definite distinguishing feature between the species; genital capsule also paler than *tagalica.* Length 11-16 mm.

DISTRIBUTION: Coastal New Guinea, Louisiade Archipelago, Solomon Is., Marshall Is.

MARSHALL IS. KWAJALEIN: Two males, two females, Bweje, Jan. 1945, Wallace; two males, two females, Berlin, Jan. 1945, Wallace; female, Kwajalein, airfield, Aug. 1946, Oakley; six males, no precise locality, Apr. 1948, Maehler. NAMU: Seven males, five females, Majkon (Koginen), on *Allophyllus,* Oct. 1953, Beardsley. JALUIT: Male, Imroj, Aug. 1946, Townes (paratype of *Leptocoris lariversi* Usinger). MAJURO: Five males, female, Uliga, on *Allophyllus,* Nov. 1953, Beardsley. ARNO: Male, six females, Ine, July 1950, La Rivers; seven males, three females, nymph, no precise locality, July 1950, La Rivers. RATAK ISLANDS: Male, no precise locality, von Chamisso. No other data, two males [one labeled *indecorus* Esch. (= Eschscholtz?); as explained in my revision of this genus this appears to be a nomen nudum].

SUBFAMILY ALYDINAE

The Alydinae, like the Rhopalinae, are well represented in Micronesia by four genera belonging to two tribes, the Leptocorisini and the Alydini. The two genera of the Alydini are revised by J. C. Schaffner in this paper under his name (pp. 373-377).

KEY TO MICRONESIAN TRIBES OF ALYDINAE

Hind femora somewhat incrassated, with several or many spines on ventral surface .... **Alydini**
Hind femora elongate, unarmed, not incrassated .... **Leptocorisini**

TRIBE LEPTOCORISINI

KEY TO GENERA OF MICRONESIAN LEPTOCORISINI

Head long, jugae porrect, produced in front of tylus and longer than it; pronotum longish, lateral angles unarmed .... **Leptocorixa**
Head short, somewhat declivious in front of antennae, pronotum shorter, convex, each lateral angle armed with a spine .... **Noliphus**

Genus **Leptocorixa** Berthold

Leptocorixa Berthold, 1827, IN Latreille, Nat. Fam. Thierreichs, 418.—Bergroth, 1913, Soc. Ent. Belgique, Mem. **22**: 159.—Slater, Barber, and Sailer, 1959, Ent. News **70** (7): 186, 189; 1961, Bull. Zool. Nomenclature **18** (4): 287-288 (application to Plenary Commission to suppress *Myodocha* Latreille as original name for this genus).

Leptocorisa Latreille, 1829, IN Cuvier, Règne Anim. (new edition) **5**: 197.—Laporte, 1832, Essai Hemipt. IN Mag. Zool. **2**: 55.—Distant, 1902, Fauna Brit. India, Rhynch. **1**: 409.—Van Duzee, 1917, Cat. Hemiptera north of Mexico, 109 (for further synonymy).—Villiers, 1952, Hemipt. Afrique noire, 106.

6. Leptocorixa acuta (Thunberg).

Cimex acuta Thunberg, 1783, Dissert. Ent. Ins. **2**: 34.

Cimex angulata (in part) Fabricius, 1787, Mant. Ins. **2**: 308.

Gerris angustata (in part) Fabricius, 1794, Ent. Syst. **4**: 191; 1803, Syst. Rhyng. 262.—Stål, 1868, K. Sven. Vet.-Akad., Handl. **7** (11): 66.

Cimex angusta Gmelin, 1790, Syst. Nat. **1** (4): 2193.

Gerris oratoria Fabricius, 1794, Ent. Syst. **4**: 191; 1803, Syst. Rhyng., 261.

Leptocorisa bengalensis Westwood 1842, Cat. Hemipt. Coll. Hope **2**: 18.

Leptocorisa arcuata Kolenati, 1845, Melet. Ent. Hemipt. 2: 67.

Myodocha trinotata Herrich-Schaeffer, 1848, Wanzen. Ins. **8**: 95, fig. 863.

Leptocorisa maculiventris Dallas, 1852, List. Hemipt. Ins. **2**: 484.

Leptocorisa acuta, Distant, 1888, Ent. Soc. London, Trans. 482.—China, 1924, Bull. Ent. Research **14**: 236, figs.—Dammerman, 1929, Agric. Zool. Malay Archip., 223, figs.—Usinger, 1946, B. P. Bishop Mus., Bull. **189**: 24.

Leptocoris acuta, Horvath, 1919, Senckenb. Nat. Ges., Abh. **35**: 311.

Leptocorixa (Rhabdocoris) acuta, Blöte, 1934, Zool. Meded. **17**: 282.

General color pale ochraceous, legs entirely pale ochraceous. Apical segment of antennae more than 1.5 times as long as second. Length 14-18 mm.

DISTRIBUTION: India, Ceylon, Thailand, Malay Peninsula, Indonesia, Philippines, Bonin Is., Mariana Is., Caroline Is.

BONIN IS. MUKO JIMA: One, July 1951, Bohart. ANI JIMA: Two, Sen-zan, Northeast Bay, May 1958, Snyder. CHICHI JIMA: Two, Omura, June 1949, Mead; nine, hills east of Omura, June 1949, Mead; one, June 1949, Mead; four, in light trap, July 1949, Mead; 18, "Camp Beach," April 1958, Snyder; 12, Miyanohama, "Jack Williams' Beach," April 1958, one, May-June 1958, Snyder; two, Yoake Yama, Apr. 1958, Snyder; three, Omura, "Camp Beach," May-June 1958, Snyder and Mitchell; two, Sakaiura,

"Bull Beach," May 1958, Snyder; no precise locality, two, July 1951, Bohart.

N. MARIANA IS. PAGAN: Two, Laguna-Malas, April 1940, Yasumatsu.

S. MARIANA IS. SAIPAN: Two, As Mahetog area, Nov. 1944; two, Nov. 1955; one, Nov. 1944, all by Dybas; three, no precise locality, Nov. 1944, Edgar; five, 1.2 miles east of Tanapag, Nov. 1944, Edgar; same locality, four, Apr. 1945, two, July 1945, Dybas; one, Laulau Bay, Jan. 1945, Dybas; two, Kannate Edtot, June 1946, Townes; two, no precise locality, June 1946, Townes. TINIAN: One, Tinian Harbor, Mar. 1945, Dybas; one, Mt. Lasso, June 1946, Townes; no precise locality, Nov. 1952, Beardsley. ROTA: Two, Oscilita, June 1946, on rice, Oakley; three, no precise locality, June 1951, Bohart. GUAM: Five, July 1945, Gressitt and Bohart; one, Piti, Jan. 1936, Swezey; four, Pt. Oca, in light trap, June 1945, Bohart and Gressitt; two, Mt. Alutom, July 1945, Wallace; one, Pt. Ritidian, Aug. 1945, Gressitt; one, Mt. Balanos, Aug. 1952, Krauss.

PALAU. BABELTHUAP: One, Ngerehelong, May 1957, Sabrosky; three, Ngiwal, Apr. 1936, Ono; three, Ulimang, Dec. 1947, two, Dec. 1947, Dybas; one, Ngiwal-Ngarard, Aug. 1939, Esaki; one, Ngaremlengui, at light, June 1957, Sabrosky; one, Melekeiok, at light, May 1957, Sabrosky; three, east Ngatpang, 65 m., Dec. 1952, Gressitt; two, Ngaremeskang, 25 m., Dec. 1952, Gressitt; one, Imeliik-Netkeng, at light, June 1957, Sabrosky; one, Irrai-Ngerimal R., May 1957, Sabrosky. KOROR: One, May 1936, Ono; one, Arabaketsu, Jan. 1938, Murakami; one, July 1946, Townes; one, July 1946, Oakley; eight, northeast corner of Koror, July 1946, Townes; two, Nov. 1947, Dybas; one, Dec. 1947, Dybas; one, sweeping grass, Sept. 1952, Beardsley; two, Sept. 1952, Beardsley; three, Sept. 1952, Krauss; one, at light, May 1953, Beardsley; one, Mar.-May 1954, Osborne; two, Apr. 1957; six, Apr. 1957, Sabrosky. NGERKABESANG: Four, July 1946, Townes; one, Apr. 1957, Sabrosky.

YAP. RUMUNG: One, north part, two, west part, four, east part, two, south part, July-Aug. 1950, Goss. MAP: Two, central part, four, east part, six, south part, July-Aug. 1950, Goss. YAP: One, Rul-Nif, Sept. 1939, Esaki; five, Gagil District, July 1946, Oakley; five, July-Aug. 1950, Goss; five, central part, July-Aug. 1950, Goss; one, Dugoi, July-Aug. 1950, Goss; one, Rul, July 1946, Oakley; one, Aug. 1952, Krauss; one, Sept. 1952, Krauss; four, Oct. 1952, Krauss; one, Dugor-Rumu, 10 m., Nov. 1952, Gressitt; three, Yap Hill behind Yaptown, 50 m., in light trap, Dec. 1952, Gressitt; one, no date, Ono; four, Kolonia (Yaptown), July-Aug. 1950, Goss; 24, Ruul, July-Aug. 1950, Goss; six, south part, July-Aug. 1950, Goss; one, no precise locality, July 1951, Gressitt.

TRUK. WENA (Moen): Three, Dec. 1935, Ono; 25, 0-400 feet, May 1946, Townes; four, south slope, Mt. Tonaachau, sweeping grass, Feb. 1949, Potts; Civ. Ad. Area, three, Feb. 1949, one, at light, March 1949, nine,

March 1949, five, Apr. 1949, all by Potts; two, North Basin, Mt. Chukumong, Feb. 1949, Potts; two, no precise locality, Feb. 1948, Dybas; two, Oct. 1952, Beardsley. DUBLON: Eight, Dec. 1935, four, Jan. 1936, Ono; one Oct. 1952. FEFAN: Three, on *Oryza sativa,* 1946, Townes; two, Mt. Iron, Jan. 1953. TON (Tol): One, Apr. 1939, Yasumatsu and Yoshimura; Mt. Unibot, 25-50 m., Dec. 1952, Gressitt.

In general, larger and more robust than the rest of the Oriental species but many Micronesian specimens, particularly from southern island groups tend to be smaller. Micronesian specimens often have the basal segment of the antenna darkish with a fuscous apex. There seems little doubt that the species is *acuta* on the basis of male genital claspers.

Genus **Noliphus** Stål

Noliphus Stål, 1858, Öfv. K. Vet.-Akad., Förh., 440; 1865, Hemipt. Africana 2:6; 1873, K. Sven. Vet.-Akad., Handl. 11 (2): 87.

Head not very long, arched downward in front of antennae, jugae not as long as tylus. Pronotum very raised posteriad with each posterior angle developed into an acute spine. Collar of pronotum quite distinct and the whole surface strongly punctate. All femora slender and unarmed.

7. **Noliphus erythrocephalus** Stål.

Noliphus erythrocephalus Stål, 1858, Öfv. K. Vet.-Akad., Förh., 440.—Blöte, 1934, Zool. Meded. **17**: 285 (locality records only).

Head reddish ochraceous, eyes brown, ocelli margined with black on inner margins. Antennae yellowish, apices of segments 1 to 3 and all but base of segment 4 infuscated. Pronotum black, somewhat lightened in anterior region. Scutellum, apical two-thirds of clavus, and inner half of corium brown, outer half of corium and base of clavus black; membrane hyaline.

Upper surface of abdomen red with black bars on lateral margins and last segment blackish. Propleurae, prosternum, rostrum, and anterior two-thirds of mesopleurae and mesosternum black. Posterior third of mesopleurae, mesosternum, and all of metapleurae and metasternum yellowish. Abdomen beneath reddish with four lateral black spots in the same positions of those above, last two visible segments black, also disc of two segments preceding apical black pair is black. All coxae red, all femora basally pale, apically darkened, apical dark region of femur with a pale band dividing it in two. Tibiae yellowish brown, apically infuscated, first two segments of tarsi yellowish brown, apical one darkened. Length 10-13 mm.

DISTRIBUTION: Philippines, Indonesia, W. Caroline Is., New Guinea, North Australia.

PALAU. BABELTHUAP: One, Melekeiok, Apr. 1936, Ono. KOROR: One, Jan. 1938, Esaki.

N. discopterus Stål from Samoa and *N. insularis* Stål from Fiji may possibly be just races of *N. erythrocephalus* which is widely distributed in the Pacific.

TRIBE ALYDINI FABRICIUS[2]

KEY TO GENERA AND SPECIES OF MICRONESIAN ALYDINI

1. Humeral angle of pronotum rounded or angulate but not forming spine; rostrum not extending beyond posterior margin of mesothoracic coxae........................ ....8. **Melanacanthus margineguttatus**
   Humeral angle drawn out into spine; rostrum surpassing mesothoracic coxae (*Riptortus*) 2
2. Antennal segment 4 shorter than 2 and 3 combined........................9. **Riptortus saileri**
   Antennal segment 4 longer than 2 and 3 combined........................10. **Riptortus macleani**

Genus **Melanacanthus** Stål

Melanacanthus Stål (as subgenus of *Mirperus* Stål), 1873, Enumeratio Hemipterorum **3**: 92.

This genus is apparently restricted to Australia, Java, and Pacific islands. It extends from Australia northward to Formosa and the Mariana Islands, and eastward to Samoa. Three of the four described species are found in Australia.

8. Melanacanthus margineguttatus Distant.

Melanacanthus margineguttatus Distant, 1911, Ann. Mag. Nat. Hist. VIII, **7**: 585.—Usinger, 1946, B. P. Bishop Mus., Bull. **189**: 25.

DISTRIBUTION: Australia, New Zealand, Fiji, Samoa, Mariana Is.

S. MARIANA IS. GUAM: Two females, five males, May 1939, Oakley; one female, two males, from sorghum, June 1938, Oakley; one female, 1946, Krauss; three females, two males, Agana Heights, July 1945, Wallace. ROTA: Two males, from pigeon pea, June 1946, Oakley. AGIGUAN: One male, West Point, May 1952, Kondo. TINIAN: Three males, Mar. 1946, Hadden; two females, four males, March 1946, Hadden; two males, June 1946, Townes; one male, Mt. Lasso, June 1946, Townes; two females, one male, Camp Churo, June 1952, Kondo. SAIPAN: Two females, from *Cajanus cajanus*, June 1946, Oakley; one female, two males, March 1948, Lange; two females, Kannat Edtot, June 1946, Townes; one female, USCC Farm, June 1946, Oakley; one male, Garapan Sadog Tasi, May 1940, Yasumatsu and Yoshimura. PAGAN: One female, Sõngsõng Begusa, April 1940, Yasumatsu and Yoshimura.

Additional locality records from Guam, with notes on the biology of this species, are given by Usinger (1946).

As with other members of the genus, both sexes of *M. margineguttatus* exhibit many varying degrees and combinations of size and appearance which

[2] This section by J. C. Schaffner, Iowa State University, Ames, Iowa.

make it a confusing species to study. Comparative measurements, lack of variation of genitalia, and certain rather consistent characters of the pronotum seem to warrant the conclusion that only one species is involved. It does, however, differ somewhat from the original descriptions of all members of the genus and until specimens can be compared with the types, it seems advisable to accept, with some reservations, the name applied to the species considered here. Specimens from the Mariana Islands differ from those from the New Hebrides which agree more closely with Distant's description of *M. margineguttatus*.

Genus **Riptortus** Stål

Riptortus Stål, Öfv. K. Vet.-Akad. Förh. **16**: 460, 1859.

This widespread, primarily tropical, genus ranges from western Africa eastward through Asia to the Marshall Islands but is not found in the Western Hemisphere. Two species, one of which is new, are known from Micronesia.

9. Riptortus saileri Usinger.

Riptortus saileri Usinger, 1952, Hawaiian Ent. Soc., Proc. **14**: 521-522.

DISTRIBUTION: Marshall Islands (Kwajalein).

MARSHALL IS. KWAJALEIN: Kwajalein I., airfield, Aug. 1946, Oakley.

Apparently this species is known only from the holotype in the United States National Museum (61458). The character given in the key combined with its somewhat smaller size should make it easy to distinguish from *R. macleani*. An outline drawing of the male clasper accompanies Usinger's description.

10. Riptortus macleani Schaffner, n. sp. (fig. 5).

Male: Head: Ferrugineous, with dark brown to black on lateral portion of jugum and posteriorly beneath antenna to eye, an area at base of each ocellus which extends back onto neck and occasionally forward to eyes and behind eyes; flavescent line laterally from behind anterior portion of tylus, posteriorly, beneath antenna and eye and continuing on thorax; also a narrow light testaceous line between antennal socket and eye. Comparative measurements of head width (through eyes) to length (measured laterally from tip of tylus to posterior margin of eye), 51: 47. Clothed with many short appressed hairs imparting golden coloration under strong illumination; a few longer hairs especially on tylus and around eyes. Antenna ferrugineous with segments 1 to 3 usually dark brown to black apically, segment 4 sometimes lighter basally. Segments 1 to 3 with sparse short hairs which become longer near apex of segment 3; terminal segment densely covered with short appressed hairs; comparative lengths of antennal segments, 66: 43: 43: 123. Rostrum ferrugineous, apical half or more of segment 4 and sometimes anterior margins of all segments dark brown to black; smooth and shining with sparsely scattered hairs; labrum rugose. Comparative lengths of segments, 36: 37: 20: 36; rostrum reaching or almost reaching hind coxae.

Thorax: Ferrugineous; ventral portion dark brown to black, midventral groove of mesothorax lighter than bordering areas as are areas of metathorax immediately behind mesothoracic coxae. Flavescent line on prothorax continued from head, dorsal

and ventral margins of flavescent areas on meso- and metapleura not parallel with those margins of prothorax (as in *R. linearis*); small callosity at posterior margin of mesopleuron also flavescent. Anterior one-fifth of pronotum not raised above level of head; minutely reticulate with sparse punctures and middorsally with two short impressed grooves on posterior portion of area. Remaining four-fifths of pronotum angling more abruptly upward to a point well above level of head; humeral angles projecting posterolaterally into black-tipped spines about as long as distance of line between outer margins of both ocelli. Pronotum indented somewhat along middorsal line; posterior margin turned downward; strongly punctate and clothed with short appressed hairs appearing golden under strong illumination. Meso- and metapleura with large smooth flavescent spots, shining and with sparse vestiture; rest of lateral portions smooth to minutely granulate, punctate at dorsoposterior angles and along posterior margins onto area above coxal cavities. Entire thorax grooved midventrally. Ostiolar

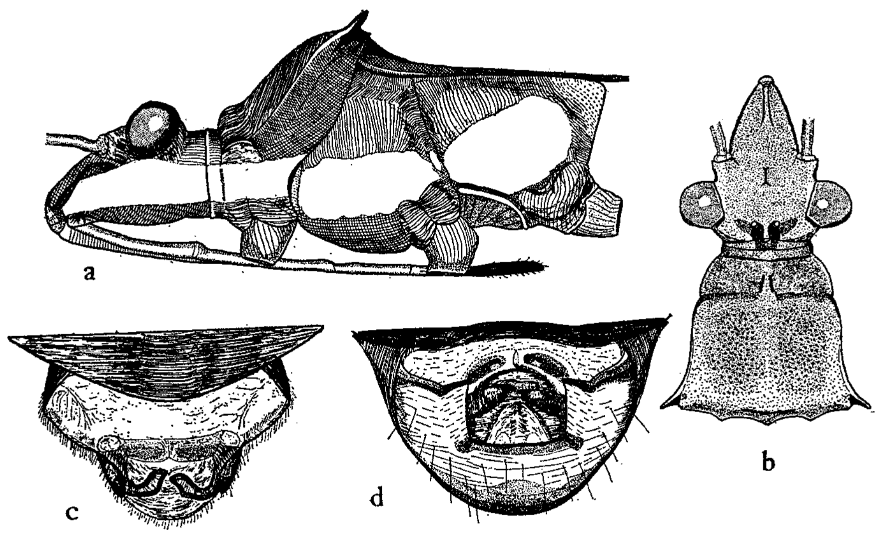


FIGURE 5.—*Riptortus macleani*, male: **a**, head and thorax, lateral view; **b**, head and pronotum, dorsal view; **c**, genital capsule, dorsal view; **d**, genital capsule, posterior view.

peritreme broadly curved, testaceous; evaporative area minutely reticulate and with grooves running mesially. Legs testaceous, sometimes dark brown or black, occasionally mottled with darker spots. Hairs of femora and tibiae short, not longer than diameter of tibiae; sparse and more or less in longitudinal rows. Apex of tibiae sometimes darker and hind femur tending to be darker ventrally and sometimes rugose. Posterior margin of hind femur with row of spines; a series of short spines or protuberances between last two large apical spines and between last large spine and apex of femur. Last tarsal segment and sometimes middle segment darker than first; claws dark brown or black, at least at tip. Scutellum ferrugineous with flavescent tip. Wing with corium ferrugineous and clearly punctate with short hairs emanating from punctures. Membrane light brown and transparent with 11 or 12 prominent veins.

Abdomen: Testaceous to ferrugino-testaceous; usually with brown to brownish-black areas laterad to midventral line of segments 3 or 4 to 7, sometimes covering midline on segment 5 and posterior portion of 6 and nearly always covering midventral area of 7. Many short appressed hairs and some longer hairs especially laterally;

trichobothria brown. Dorsal surface of abdomen testaceous with wide middorsal dark brown to blackish band extending posteriorly to hind margin of dorsum; posterior corners of connexivum of segments 5 and 6 each with a dark spot. Comparative measurements of segments 3 to 5 along midventral line, 19: 42: 25. Genital capsule testaceous with posterior margin sometimes dark brown to black; many long hairs. Claspers narrow, curved inwardly, flattened and somewhat rounded at apex. Length 14-17 mm.; width 2.5-3.3 mm.

Female: Very similar to male but differing somewhat in occasionally having a lateral thoracic fascia or series of spots much narrower than that of male. Abdomen more robust; color pattern of underside diffuse or lacking, frequently spotted with red, dark brown, or black.

Holotype, male (Bishop 3339), Palau, Babelthuap, Melekeiok, mangrove, May 23, 1957, Sabrosky; allotype, female, Palau, Babelthuap, Melekeiok, May 24, 1957, Sabrosky. Paratypes, Palau: Male, from *Indigofera anil,* Mar. 15-25, 1948, Maehler; eight males, Arakabesan, July 18, 1946, Townes; six females, five males, Koror, Mar. 15-25, 1948, Maehler; two females, male, Koror, from *Cassia occidentalis,* July, 1952, Beardsley; four males, Koror, on small yellow flowers of roadside legume, Nov. 24, 1947, Dybas; female, Koror, Nov. 17, 1947, Dybas; two females, Koror, Sept. 1952, Krauss; male, Koror, Apr. 18, 1957, Sabrosky; two females, male, Babelthuap, Gakip, July 19, 1946, Oakley; male, Babelthuap, Ngerebelong, May 6, 1957, Sabrosky; female, Babelthuap, Airai: Ngarsung, at light, May 16, 1957, Sabrosky; two females, Babelthuap, Ulimang, Dec. 9, Dec. 11, 1947, Dybas; male, Peleliu, west coast, Feb. 2, 1948, Dybas; female, Angaur, Saipan Higashimura, Mar. 10, 1936, Esaki. Yap: Female, two males, Yap I., Aug., Sept., Oct., 1952, Krauss; male, Yaptown, July 12, 1946, Townes; two females, male, Yap, Kolonia, July-Aug., 1950, Goss; two males, Yap, Ruul Dist., July-Aug., 1950, Goss; female, Yap, Sept. 1956, McDaniel; male, Map, Oct. 22, 1952, Krauss.

The following specimens are in too poor condition to be considered as paratypes. Palau: Babeldaob, Ngardok, Ngarmisukan, Feb. 11, 1938, Esaki; Ngerkabesang, Apr. 25, 1957, Sabrosky; Yap, Yaptown, Mt. Matada, July 13, 1946, Townes.

Philippine Islands: Several specimens.

DISTRIBUTION: Caroline Is. (Palau, Yap), Philippine Is.

Included in a series of specimens taken from Arakabesan by Townes, July 18, 1946, are a male and female having a color pattern variation which seems worthy of mention. The general color is a rich reddish brown and the normally flavescent parts are white; the structural characters, however, compare closely with those of other members of the series. The color difference probably is due to methods of killing or of preservation.

This medium-sized species can be separated from all other *Riptortus* species by the comparative lengths of the antennal segments, the margins of the lateral thoracic fascia which are not parallel through its entire length, the shape of the pronotum with its spines of medium length, the black stripe on the dorsum of the abdomen, and the external male genitalia.

R. macleani is closely related to an apparently undescribed species found in the Philippine Islands which has an abdomen lacking the black stripe on the dorsum. It is also closely related to *R. saileri* Usinger, but differs in having antennal segment 4 longer than 2 and 3 combined.

This species is named in honor of Professor G. E. McLean whose enthusiasm as an amateur naturalist stimulated me to choose the biological field for a lifetime study.

Subfamily COREINAE

The species of Coreinae are apparently not particularly adept at crossing ocean barriers and are found only rarely on oceanic islands. In the Pacific, only the genus *Leptoglossus* of the whole subfamily is at all widespread, and even this is absent from Hawaii although the much smaller subfamilies Alydinae and Rhopalinae both have representatives there.

There are six genera of Coreinae known from Micronesia but, with the exception of *Leptoglossus,* the species are found only on island groups close to other large land masses, for example, two genera and two species in the Marianas and one genus and two species in Palau.

The four tribes of Micronesian Coreinae can be separated as follows:

Key to Micronesian Tribes of Coreinae

1. Hind femora armed with spines..2
   Hind femora unarmed, slender..3
2(1). Hind femora not very incrassated, hind tibiae with laminate expansions..**Anisoscelini**
   Hind femora incrassated, hind tibiae slender..**Physomerini**
3(1). Hind angles of pronotum with an acute, forwardly directed spine......**Gonocerini**
   Hind angles of pronotum obtuse or only with an obtuse spine................**Dasynini**

Tribe PHYSOMERINI

Genus **Acanthocoris** Amyot and Serville

Acanthocoris Amyot and Serville, 1843, Hist. Nat. Ins. Hemipt., 213.—Dallas, 1852, List. Hemipt. Ins. 2: 487.—Stål, 1865, Hemipt. Africana 2: 3, 53; 1873, K. Sven. Vet.-Akad., Handl. **11** (2): 70.

Claval suture longer than apical margin of corium; segment 4 of antenna shortest of all; eyes small. Posterior tibiae moderately dilated, posterior femora incrassated, shiny, apices above with a short spine or tubercle. Mesosternum not sulcated. Pronotum above with numerous fine tubercles, lateral margins serrate. Numerous stiff, hairlike spines on pronotum, head, antennae, legs, and outer basal margin of corium.

11. **Acanthocoris scaber** (Linnaeus).

Cimex scaber Linnaeus, 1763, Centuria Insectorum Rariorum, 17; 1763, Amoen. Acad. **7**: 400; 1767, Syst. Nat., 12th ed. **1** (2): 719.—Gmelin, 1788, Syst. Nat. **1** (4): 2138.

Alydus scaber, Thunberg, 1822, Dissert. Ent. Hemipt. **3**: 2.

Acanthocoris scaber, Stål (in part), 1866, Berlin. Ent. Zeitschr. **10**: 158; 1873, K. Sven. Vet.-Akad., Handl. **11** (2): 71.

Acanthocoris acutus Dallas, 1852, List Hemipt. Ins. **2**: 516.

Dark chocolate brown, corium near apical margin, abdominal incisures above and a band on all tibiae (especially broad on middle tibia) yellowish. Last segment of antenna paler brown. Above covered with a fine whitish or yellowish adpressed pilosity, beneath this much thicker, giving a hoary appearance beneath. Pilosity, on legs intermediate in thickness between that above and that below.

DISTRIBUTION: Java, China, S. Mariana Is.

S. MARIANA IS. GUAM: One, Tutujan, Sept. 1953, Liming; one, Mt. Lamlam, Oct. 1957, Krauss; six adults, three nymphs, Umatac, March 1958, Krauss.

The early descriptions of the species from our region are extremely brief and not a single paper has set out clearly the differences between *scaber* Linnaeus, *scabrator* Fabricius, *clavipes* Fabricius, and *sordidus* Thunberg. These Guam specimens differ from our series of *scabrator* from Malaya and hence the Linnaean name seems the most applicable.

TRIBE ANISOSCELINI

Genus **Leptoglossus** Guérin

Leptoglossus Guérin, 1838, IN Duperrey, Voy. Coquille, Zool. 2 (2), Div. 1: 174.—Stål, 1870, K. Sven. Vet.-Akad., Handl. **9** (1): 160; 1873, ibid. **11** (2): 68.—Distant, 1902, Fauna Brit. India, Rhynch. **1**: 382.—Van Duzee, 1917, Cat. Hemipt. North of Mexico, 87.—Villiers, 1952, Hemipt. Afrique noire, 101.

Anisoscelis Spinola, 1837, Essais Genres Ins. Hemipt. Rhyng., 200.—Walker, 1871, Cat. Hemipt. 4: 124.

Theognis Stål, 1862, Stett. Ent. Zeitung 23: 294; 1867, Öfv. K. Vet.-Akad., Förh., 544.

Head elongate, produced in front of antenniferous tubercles. Antennae long and slender, segment 1 thicker and feebly curved. Pronotum broader than long, lateral angles prominent. Fore femora lightly armed beneath, middle femora with more spines, and hind femora strongly armed and reaching apex of abdomen. Hind tibiae expanded near base into large plates on either side, the inner one narrower and rounder, the outer one wider and dentate on its outer margin.

12. **Leptoglossus australis** (Fabricius).

Cimex australis Fabricius, 1775, Syst. Ent., 708; 1781, Species Ins. **2**: 352; 1787, Mantissa Ins. **2**: 289.—Gmelin, 1788, Syst. Nat. **1** (4): 2143.

Lygaeus australis Fabricius, 1794, Ent. Syst. **4**: 140; 1803, Syst. Rhyng., 211.

Theognis australis, Mayr, 1866, Reise Novara, Hemipt., 104.—Kirkaldy, 1908, Linn. Soc. New South Wales, Proc. **33**: 352.

Leptoglossus australis, Stål, 1868, K. Sven. Vet.-Akad. Handl., **7** (11): 51.—Cheesman, 1927, Ent. Soc. London, Trans., 155.—China, 1930, Ins. Samoa 2 (3): 97.—Usinger, 1939, Sixth Pacific Sci. Congress, Proc. **4**: 313; 1946, B. P. Bishop Mus., Bull. **189**: 23.

Anisoscelis australe, Montrouzier and Signoret, 1861, Soc. Ent. France, Ann. **4** (1): 66.

Cimex membranaceus Fabricius, 1781, Species Ins. **2**: 351; 1787, Mant. Ins. **2**: 289.—Gmelin, 1788, Syst. Nat. **1** (4): 2142.

Lygaeus membranaceus Fabricius, 1794, Ent. Syst. **4**: 139; 1803, Syst. Rhyng. 209.—Wolff, 1800, Icones Cimicum **1**: 22, fig. 22.

Anisoscelis membranaceus, Burmeister, 1834, Acad. Leop. Carol., Nova Acta **16** (6), suppl.: 295; 1835, Handb. Ent. **2** (1): 322.—Dallas, 1852, List Hemipt. Ins. **2**: 454.—Westwood, 1842, Cat. Hemipt. Coll. Hope **2**: 16.

Theognis membranaceus, Stål, 1865, Hemipt. Africana **2**: 86.—Stoll, 1782, Hist. Nat. Punaises France, fig. 73.

Leptoglossus membranaceus Stål, 1873, K. Sven. Vet.-Akad. Handl. **11** (2): 69.—Tryon, 1892, Queensland Mus., Ann. **2**: 22.—Horvath, 1900, Denkschr. Med. Naturw. Ges. Jena **8**: 636.—Distant, 1902, Fauna Brit. India, Rhynch. **1**: 382, fig.—Kirkaldy, 1905, Ent. Soc. London, Trans., 352.—Shiraki, 1910, Extra-Rep. Agric. Expt. Sta. Formosa **1**: 91, pl. 38, fig. 18; 1913, ibid. **8**: 191.—Matsumura, 1913, Thousand Insects of Japan, Addit. **1**: 135, pl. 13, fig. 18.—Distant, 1913: Linn. Soc. London, Zool., Trans. **16** (2): 146.—Esaki, 1926, Mus. Nat. Hungarici, Ann. **24**: 154.—Pagden, 1928, Malay. Agric. Jour. **16**: 387-403, figs.—Blöte, 1936, Zool. Meded. **19**: 29.—Tillyard, 1926, Ins. Australia and New Zealand, 147.—Villiers, 1952, Hemipt. Afrique noire, 102.

Cimex momordicae Forster, 1844, Descript. Anim., 16.

Anisoscelis orientalis Dallas, 1852, List Hemipt. Ins. **2**: 454.

Anisomelis orientalis, Kirby, 1891, Linn. Soc. Zool., Jour. **24**: 92.

Anisoscelis flavopunctatus Signoret, 1863, IN Maillard, Notes l'île Reunion, Annexe J, 27, pl. 21, fig. 4.

Anisoscelis (*Lygaeus*) *bidentatus* Montrouzier, 1855, Soc. Agric. Lyon, Ann. II, **7**: 101.

Leptoglossus bidentatus, Stål, 1873, K. Sven. Vet.-Akad., Handl. **11** (2):

69.—Distant, 1914, IN Sarasin and Roux, Nova Caledonia, Zool. 1 (4): 377.

Leptoglossus membranaceus bidentatus, Schouteden, 1907, Soc. Ent. Belgique, Ann. **51**: 113. Bergroth, 1913, Soc. Ent. Belgique, Mem. **22**: 142.—Blöte, 1936, Zool. Meded. **19**: 29.

Black or dark chocolate brown above. Several longitudinal bars on head, a large arcuate fascia crossing anterior area of pronotum, extreme apex of scutellum, sometimes a small dot on disc of corium, abdominal incisures above, numerous maculae on body beneath, sometimes one or two spots on foliaceous dilations of hind tibiae, broad bands on antennal segments 2 and 3 and most of segment 4 (except extreme base) reddish ochraceous or yellow.

DISTRIBUTION: Most of Africa, Canary Islands, Madagascar, Indian subcontinent, Ceylon, Burma, Nicobar Is., Andaman Is., Seychelles Is., Formosa, Philippines, Micronesia, Malaya, Indonesia, New Guinea, Woodlark Is., Northern Australia, New Hebrides, New Caledonia, Solomon Is. (San Cristoval), Fiji Is., Samoa, Tahiti.

N. MARIANA IS. PAGAN: Three, Sept. 1949, Kondo; one, July 1951, Bohart; five, Aug. 1954, Corwin.

S. MARIANA IS. SAIPAN: Two, Tanapaku, Feb. 1936, Esaki; four, As Mahetog area, Nov. 1944, Dybas; one, Nov. 1944, Hagen; four, Dec. 1944, Dybas; five, As Akina area, Dec. 1944, Dybas; two, Mt. Tagpochau, 1 mile north northeast of summit, Jan. 1945, Dybas; one on cotton plant, southern part, May 1945, Dybas; two by beating vegetation, May 1945, Dybas; five, Apr. 1946, Krauss; one, Garapan, Apr. 1946, Krauss; two, Chalan Laulau, Apr. 1946, Krauss; three, Matansha, Apr. 1946, Krauss; five, former Japanese Experimental Station, June 1946, Oakley; six, northern part, Dec. 1944, Dybas; four, no precise locality, June 1951, Bohart. TINIAN: One, Mar. 1945, Dybas; 10, Mar. 1946, Hadden; 14, on *Passiflora foetida,* June 1946, Townes; one, June 1946, Oakley; two, July 1949, Mead; three, on watermelon, Nov. 1952, Beardsley. AGIGUAN: One, July 1949, Mead and Kondo. ROTA: One, Sosan Isthmus, Oct. 1945, Necker; one, July 1949, Kondo. GUAM: One, edge of forest, 1923, Hornbostel; eight, on milkweed, Mar. 1924, Hornbostel; one, Namru 2, May 1945, Bohart and Gressitt; one, Agana, May 1945, Bohart and Gressitt; one, Agana Heights, July 1945, Wallace; one, Mt. Santa Rosa, May 1945, Bohart and Gressitt; two, Amantes Pt., May 1945, Dybas; one, Pago Bay, June 1945, Dybas; one, Barrigada, Aug. 1945, Wallace; one, Aug. 1945, Chaffee; two, Mt. Alifan, Apr. 1946, Krauss; three, near Yona, Apr. 1946, Krauss; six, Yona, Oct. 1952, Krauss; one, Anderson Air Force Base, Aug. 1952, Krauss; two, Metizo, Oct. 1957, Krauss.

PALAU. One, no precise locality, Apr. 1936, Ono. KOROR: Two, northeast corner, July 1946, Townes; two from *Passiflora,* Aug. 1952, Beardsley; one, Jan. 1954, Beardsley; one, Apr. 1957, Sabrosky. NGERKABESANG (Arakabesang): Two, July 1946, Townes; one, July 1946, Oakley.

PONAPE. One, Colonia, Feb. 1936; three, Mar. 1936, Ono; one, Colonia-Jokaji, Nov. 1937, Esaki; one, Colonia-Paliker, Dec. 1937, Esaki; three, Colonia, Aug. 1946, Townes; two, Colonia, on *Passiflora,* Aug. 1946, Oakley; one, Colonia hydroelectric plant, Aug. 1946, Townes.

I have seen an African specimen and a large series from Micronesia, New Guinea, and Australia and am unable to concede that there is more than one species involved. African and Indian specimens tend to be dark brownish with the spine on the humeral angles of the pronotum and the foliaceous dilations of the hind tibiae maximally developed. Australian and Micronesian specimens are black and in general have the humeral angles obtuse and the foliaceous dilations of the hind tibiae narrower. But there are peculiar specimens in the Australian series that are chocolate-colored with obtuse humeral angles and narrower dilations, and in the Micronesian series that are black with an acute spine on the humeral angles and maximally developed foliaceous dilations. The size in the Micronesian series varies from specimens larger than I have seen for Australian and New Guinea specimens to quite small individuals, but by and large the average size of specimens of the two groups tends to be about the same.

Bearing in mind that Pacific island Hemiptera often tend to be smaller and that the more prominent spines and dilations tend to be smoothed somewhat, compared to forms of the same species found on adjacent continental or large island areas, variations in *Leptoglossus australis* are conservative when compared to species of *Leptocoris* and certain other Pacific Heteroptera.

The species has been recorded several times feeding on cucurbits; other host plants recorded are banana, guava (*Psidium*), *Citrus, Acacia,* and *Passiflora foetida.*

TRIBE DASYNINI

Only one genus, *Dasynus,* is found in Micronesia.

Genus **Dasynus** Burmeister

Dasynus Burmeister, 1834, Acad. Leop. Carol. 16, Nova Acta **16** (6), suppl.: 297.—China, 1934, Bull. Ent. Research **25**: 188.—Brown, 1955, Bull. Ent. Research **46** (1) : 234.

Pendulinus (*Dasynus*) Stål, 1873, K. Sven. Vet.-Akad. Handl. **11** (2) : 74.

Pendulinus (in part) Distant, 1902, Fauna Brit. India Rhynch. **1**: 387.

Head quadrate, produced a little in front of antenniferous tubercles. Ocelli small and placed quite far apart. Antennae with segments 1 and 2 subequal in length, 3 shorter and often dilated at apex into a flattened area.

Two species of this genus, one of them evidently new, are now recorded from Palau.

KEY TO MICRONESIAN SPECIES OF DASYNUS

Brown species, antennal segment 3 not expanded distally......................**13. D. fuscescens**
Reddish-ochraceous species, antennal segment 3 expanded distally into a flattened area..........**14. D. pallidolimbatus**

13. Dasynus fuscescens (Distant).

Pendulinus fuscescens Distant, 1911, Ann. Mag. Nat. Hist., VIII, **7**: 580.

Amblypelta fuscescens, Evans, 1952, Injurious Insects of British Commonwealth (except British Is., India, and Pakistan), 100.

Dasynus fuscescens Brown, 1958, Bull. Ent. Research **49** (3): 509.

Brownish ochraceous, body beneath and legs pale testaceous, their extreme apices black, fourth segment grayish brown, with a broad pale annulation at base. Lateral angles of pronotum subacutely produced, infuscated. Scutellum paler at tip. Membrane hyaline or smoky brown.

DISTRIBUTION: Northern Australia, New Guinea, Caroline Is. (Palau).

PALAU. NGARMALK: Two, Northwest Auluptagel, 25 m., Dec. 1952, Gressitt.

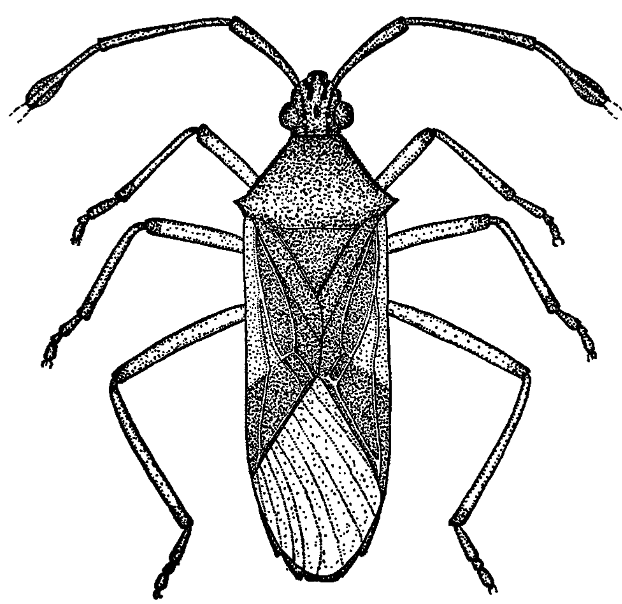


FIGURE 6.—*Dasynus pallidolimbatus.*

14. Dasynus pallidolimbatus Gross, n. sp. (fig. 6).

Reddish ochraceous. Two obsolete lines on head beginning in middle of insertion of antennae and running back to hind margin of head and lateral margins of pronotum, fuscous. Lateral margins of corium in first third narrowly, then expanded in middle third, yellow. Beneath, rostrum and most of femora and tibiae also yellowish. Eyes dark red; ocelli, coxae, apices of femora bases and apices of tibiae, all tarsi, patches on thoracic pleurae above coxae, abdominal margin broadly and most of abdomen above, paler bright red. Some black patches near apex of abdomen above and beneath. Membrane hyaline.

Antennal segment 1 rather robust, with a small spine on its hind margin about two-thirds distance from base; segment 2 about as long, thinner; segment 3 at base as thick as 2 and expanded in terminal half into a flat foliaceous dilation; segment 4 missing. Head fairly prominent, a prominent groove on either side just inside insertion of antennae, forking in front of them, one going to lateral margin just in front of insertions, the other converging with its fellow from the other side and going to anterior margin. Another prominent short groove in midline just in front of eyes and two small pits immediately in front of ocelli. Rostrum reaches almost to hind coxae, segment 1 does not reach base of head, segment 2 terminates midway between first and second coxae. Sides of pronotum almost straight, converging anteriorly, finely serrulate, hind angles with a sharp but short, outwardly directed tooth. Above coarsely punctate, beneath thorax fairly coarsely punctate, abdomen finely punctate. Length 12 mm.

Holotype, female (US 67039), Ngeremdin, Northeast Ngurukdabel, Palau Is., Dec. 5, 1952, Gressitt.

DISTRIBUTION: West Caroline Is. (Palau).

The expanded third segment of the antenna allies this species to the *coccocinctus* (Burmeister)–*laminatus* Stål group of species, but its coloration and size are very different from others of this section.

Tribe GONOCERINI

Genus **Plinachtus** Stål

Plinachtus Stål, 1859, Öfv. K. Vet.-Akad., Förh., 470; Hemipt. Africana 2:6, 81; 1873, K. Sven. Vet.-Akad., Handl. **11** (2):75.—Distant, 1902, Fauna Brit. India, Rhynch. **1**:390.

Head distinctly produced in front of insertion of antennae. Pronotum produced into short acute spines directed slightly forward. Abdominal spiracles about equidistant from basal and apical margins of segments or nearer apical margin, but nearer lateral margin than apical or basal margin.

15. Plinachtus acicularis (Fabricius).

Alydus acicularis Fabricius, 1803, Systema Rhyngotorum, 251.

Plinachtus acicularis, Stål, 1868, K. Sven. Vet.-Akad., Handl. **7** (11):62. —Distant, 1902, Fauna Brit. India, Rhynch. **1**:391, fig.—Usinger, 1946, B. P. Bishop Mus., Bull. **189**:24.

Anisoscelis rufiventris Dallas, 1850, Ent. Soc. London, Trans., 5.

Leptoscelis ventralis Dallas, 1852, List Hemipt. Ins. **2**:458.

Cletus conspicuus Walker, 1871, Cat. Heteropt. **4**:198.

Variable in color; most of the specimens before me with antennae and head violet or greenish black with a yellowish or reddish spot behind ocelli; legs, scutellum (and pronotum, in one specimen), and sometimes all the hemelytra concolorous with head and antennae. Pronotum usually with a broad ochraceous or reddish bar which may be transverse with four angulate prolongations toward hind margin or semicircular in shape with ends resting on hind margin. Clavus and inner corium lightened, either ochraceous or reddish. In three specimens whole ground color reddish with two faint infuscated longitudinal parallel bars on pronotum. One reddish specimen has darker legs and antennae, head has two dark patches on vertex behind insertion of antennae and anterior margin of pronotum (broadly), two longitudinal parallel bars and spots on humeral angles, black.

Underside of head and pronotum may be almost completely black, or underside of head black with one or two black spots on each thoracic pleura. Underside of abdomen always reddish or yellowish with conspicuous black spots on lateral margin of all visible segments; segment 4 has also a large spot about halfway from lateral margin to midline. Length 12-17 mm.

DISTRIBUTION: India, Ceylon, Mariana Is.

S. MARIANA IS. AGIGUAN: Three, ex opiuma, Nov. 1955, Davis. ROTA: One, Sonson-Tarpingot, Nov. 1937, Esaki. GUAM: One, Fadang, June 1945, Dybas; three, Yigo, Oct. 1957, Feb. 1958, Krauss.

FAMILY NEIDIDAE

In the Neididae, a family of small slender bugs which frequents damp vegetation, some rather curious distribution patterns are known.

Genus **Protacanthus** Uhler

Protacanthus Uhler, 1893, Zool. Soc. London, Proc., 707.—China, 1930, Ins. Samoa 2 (3) : 111.—Gross, 1950, South Australian Mus., Rec. 9 (3) : 324.

Auchenoplus Bergroth, 1913, Soc. Ent. Belgique, Mem. 22 : 179.

Rostrum reaching posterior coxae, basal segment not as long as head, antennal segments 2 and 3 subequal. Pronotum anteriorly armed on each side with an obliquely directed spine, and with a prominent central keel; trituberculate posteriorly. Hemelytra longer than abdomen, which tapers from base to apex. Scutellum armed with a prominent spine, process of odoriferous apertures not prolonged vertically above level of hemelytra.

Species of *Protacanthus* are found in the West Indies, Polynesia, Micronesia, India, and Australia.

16. Protacanthus pacificus China.

Protacanthus pacificus China, 1930, Ins. Samoa 2 (3) : 111, fig. 2.—Gross, 1950, South Australian Mus., Rec. 9 (3) : 324.

Anterior lobe of head (in front of ocelli) and eyes intense shining black, remainder fulvous, flecked with brown. Pronotum fulvous anteriorly and shading through brown to black posteriorly, abdomen pale green.

Head with a few short hairs, especially at apex of rostrum which reaches almost

to abdominal segment 2, relative lengths of rostral segments 35: 17: 20: 22. Humeral angles of pronotum subglobosely swollen, the median longitudinal keel on disc very distinct posteriorly, strongly elevated between tumescent humeral lobes and dilated to form an elongate, lobelike protrusion. Spines of anterior collar robust, about as long as head is wide between eyes. Hemelytra extending well beyond apex of abdomen. (Abbreviated from China.) Length 4 mm.; width 0.72 mm.

DISTRIBUTION: Samoa, Fiji, Caroline Is. (Palau).

PALAU. KOROR: One, May 1953, one, at light, June 1953, Beardsley.

FAMILY NABIDAE

Nabids are small, slender, predaceous bugs with exceptional prowess to cross ocean barriers and colonize oceanic islands. The two genera and three species that are represented in Micronesia may be separated by the following key.

KEY TO MICRONESIAN SPECIES OF NABIDAE

1. Thorax anteriorly with a broadish annuliform collar; ocelli approximated, almost contiguous. *Arbela*.......2
   Thorax without a strong transverse impression forward, hence no distinct collar, ocelli well separated.......**19. Nabis capsiformis**
2. Head, eyes, fore lobe of pronotum, hind lobe except for three pale longitudinal bands, scutellum laterally, and central position of hemelytra piceous.......**17. Arbela nitidula**
   Above and beneath light brown.......**18. Arbela hibisci**

Genus **Arbela** Stål

Acanthobrachys Fieber, 1860, Europ. Hemipt., 43 (invalid).—Stål, 1873, K. Sven. Vet.-Akad., Handl. **11** (2) : 111.—Breddin, 1905, Naturhist. Mus. Hamburg, Mitt. **22** : 145.—Distant, 1910, Fauna Brit. India, Rhynch. **5** : 219.

Arbela Stål, 1865, Hemipt. Africana **3** : 38, 42; 1873, K. Sven. Vet.-Akad., Handl. **11** (2) : 110, 111.—Walker, 1873, Cat. Hemipt. Heteropt. Brit. Mus. **7** : 52, 144.—Lethierry and Severin, 1896, Cat. Gen. Hemipt. **3** : 206. —Reuter, 1908, Soc. Ent. Belgique, Mem. **15** : 104, 125.—Bergroth, 1911, Soc. Ent. Belgique, Ann. **55** : 185.—Schroeder, 1925, Handb. Ent. **3** : 1055. —China, 1930, Ins. Samoa **2** (3) : 156.—Harris, 1958, Ann. Mag. Nat. Hist. XI, **6** : 561-584.

Lorichius Distant, 1904, Fauna Brit. India, Rhynch. **2** : 402.

Arbelopsis Poppius, 1915, Archiv Naturgesch., A. **8**, 80 : 5.

Body fairly elongate. Ocelli conspicuous, very close together. Pronotum narrowed anteriorly, transversely constricted at or near middle, front lobe with a distinct ringlike collar. Hind tibiae often swollen near base in males.

17. Arbela nitidula Stål.

Arbela nitidula Stål, 1865, Hemipt. Africana **3**: 43; 1870, Öfv. Sven. Vet.-Akad., Förh. **27** (7): 674; 1873, Enum. Hemipt. **3**: 111.—Lethierry and Severin, 1896, Cat. Gen. Hemipt. 3: 206.—Reuter, 1908, Soc. Ent. Belgique, Mem. **15**: 126.—Poppius, 1914, Tijdschr. Ent. **56**: 183.—Harris, 1938, Ann. Mag. Nat. Hist., XI, **1**: 567, figs.—Esaki and Ishihara, 1943, Mushi **15**: 71, fig.

Acanthobrachys nitidulus, Breddin, 1905, Naturhist. Mus. Hamburg, Mitt. 22: 145.

Acanthobrachys nitidula, Distant, 1910, Fauna Brit. India, Rhynch. **5**: 220 (in part).

Arbela tabidus, Esaki, 1929, Kontyû **3** (4): 224.

Arbela tabida, Esaki, 1932, IN Nippon Konchuzukan, Icon. Ins. Japon., 1669.

Arbela umbonata, Poppius, 1913, Ent. Tidskr. **34**: 258.

Lorichius umbonatus Distant, 1904, Fauna Brit. India, Rhynch. **2**: 402, fig. 257.

Metatropiphorus tabidus Uhler, 1896, U. S. Nat. Mus., Proc. **19**: 268. —Oshanin, 1908, Verz. Palaearkt. Hemipt. **1** (2): 568.

Nabis nitidula Stål, 1859, K. Sven. Freg. Eugenies Resa, Zool. **4**: 261. —Walker, 1873, Cat. Hemipt. Brit. Mus. **7**: 145.

Micronesian specimens dark. Head, eyes, anterior lobe of pronotum, hind lobe of pronotum (excepting three longitudinal pale streaks, one median and two lateral) scutellum (except a median pale streak), hemelytra (except laterally), and beneath piceous. Legs, antennae, and rostrum yellowish brown. Margins of hemelytra and longitudinal bars on pronotum and scutellum pinkish white. Length 5.7-6.3 mm.

DISTRIBUTION: Japan, Philippines, Ceylon, India, Indonesia, New Guinea, New Hebrides, Caroline Is. (Palau).

PALAU. BABELTHUAP: Ngerehelong, one, Dec. 1947, Dybas; two, May 1957, Sabrosky. NGERKABESANG: Three, July 1946, Townes; four, July 1956, McDaniel. KOROR: Two, northeast corner, July 1946, Townes; one, July 1956, McDaniel; three, Sept. 1952, Krauss; one, Aug. 1952, Beardsley; three, Apr. 1957, Sabrosky; one, sweeping grass, May 1957, Sabrosky. NGAIANGL: One, May 1957, Sabrosky; one, Dec. 1952, Beardsley. ANGAUR: One, Jan. 1953, Beardsley.

18. Arbela hibisci Esaki and Ishihara.

Arbela hibisci Esaki and Ishihara, 1943, Mushi **15**: 71, fig.

Yellowish brown. Last two segments of antennae, eyes, apices of femora and bases of tibiae, and last tarsal segments, brown or purplish. Ocelli red. Scutellum and sometimes central portion of hemelytra somewhat darker brown than rest of body. Pronotum and lateral portions of hemelytra sometimes with a greenish tinge. Fore and mid femora with long spines. Length 5.4 to 6.6 mm.

DISTRIBUTION: Caroline Is. (Palau, Ponape).

PALAU. BABELTHUAP: Two, East Ngatpang, 65 m., Dec. 1952, Gressitt; one, Ngarameskang, 25 m., Dec. 1952, one, 30 m., Dec. 1952, Gressitt. ULEBSEHEL: One, Sept. 1952, Krauss. PELELIU: Two, Jan. 1948, one, Feb. 1948, Dybas.

PONAPE: One, Colonia, Aug. 1946, Townes; four, hydroelectric plant near Colonia, Aug. 1946, Townes; one, Mt. Dolennankap, 1700-2000 ft., Aug. 1946, one, 1800 ft., Aug. 1946, Townes; six, Nanpil, Nett District, Feb. 1948, one, Feb. 1948, Dybas; three, Mt. Tamatamansakir, 500-1000 ft., Feb. 1948, one, about 1,500 ft., Mar. 1948, Dybas; two, 180 m., Jan. 1953, Gressitt; two, Mt. Kupuriso, about 2,000 ft., Mar. 1948, one, 1000-1,500 ft., Mar. 1948; two, Peipalap Pk., 800 ft., five, 600 ft., June-Sept. 1950, Adams; one, southeast Tolotom, 1,700 ft., June-Sept. 1950, Adams; one Not Point, June-Sept. 1950, Adams; four, Nanponmol, 50 m., Jan. 1953, Gressitt.

Apparently a paler species than *A. nitidula.*

Genus **Nabis** Latreille

Nabis Latreille 1802, Histoire Nat. Ins. **3**: 248.—Van Duzee, 1917, Cat. Hemipt. America, 276.—Saunders, 1892, Hemipt. Heteropt. Brit. Is., 165. —Reuter, 1908, Soc. Ent. Belgique, Mem. **15**: 92.—Zimmerman, 1948, Insects of Hawaii **3**: 139.—Woodward, 1949, Roy. Ent. Soc. London, Proc. **24** (10-12): 111-118, figs.—Anonymous, 1950, Zool. Nom. Bull. **4**: 467.—Villiers, 1952, Hemipt. Afrique Noire, 180.—1954, Intern. Comm. Zool. Nom. Opinion 244 (placed on official list; *Coriscus* Schrank 1796 rejected).

Body fairly elongate, eyes well separated from anterior margin of pronotum. Ocelli fairly well separated, rostrum long. Pronotum lightly constricted behind middle, no longitudinal keel. Fore femora somewhat incrassate, becoming slender toward apex, anterior tibiae shorter than anterior femora.

19. **Nabis capsiformis** Germar.

Nabis capsiformis Germar, 1839, Silb. Rev. Ent. **5**: 121.—Van Duzee, 1917, Cat. Hemipt. America, 280 (synonymy up to 1917).—Bergroth, 1924, Nat. Hist. Juan Fernandez and Easter I., **3** (111): 402.—Cheesman, 1927, Ent. Soc. London, Trans., 158.—China, 1930, Ins. Samoa **2** (3): 157.—Van Duzee, 1935, B. P. Bishop Museum, Bull. **114**: 322.—Izzard, 1936, Ann. Mag. Nat. Hist., X, **17**: 584.—Esaki and Ishihara, 1943, Mushi **15**: 69.—Usinger, 1946, B. P. Bishop Mus., Bull. **189**: 52.—Zimmerman, 1948, Ins. Hawaii **3**: 149, figs.—Usinger, 1951, Hawaiian Ent. Soc., Proc. **14**(2): 317; 1952, Hawaiian Ent. Soc., Proc. **14** (3): 523.—Woodward, 1954, New Zealand Inst. Mus., Rec. **4** (4): 229.

Reduviolus capsiformis Reuter, 1908, Soc. Ent. Belgique, Mem. **15**: 114. —Myers, 1926, New Zealand Inst., Trans. Proc. **56**: 475.

Reduviolus (*Reduviolus*) *capsiformis* Reuter, 1913, Öfv. Finska Vet.-Soc., Förh. **55A** (14) : 77.

Nabis (*Reduviolus*) *capsiformis,* Usinger, 1939, Sixth Pacific Sci. Congress, Proc. **4**: 313.

Elongate, grayish testaceous; an oblong spot between eyes, a central longitudinal line on pronotum and scutellum, discs of meso- and metasterna, two punctate spots on corium, one behind middle and one on hind margin and a lateral fascia to prosternum black or fuscous. Hemelytra uniformly pale. Male clasper fairly simple, rounded beneath and without a tooth (see Zimmerman's figure). Length 8-10 mm.

DISTRIBUTION: Cosmopolitan.

BONIN IS. OTOTO JIMA: One, Southeast Beach, Apr. 1958, Snyder; two, Kammuri-iwa (Southwest Bay), June 1958, Snyder and Mitchell. ANI JIMA: Two, Sen-zan (Northeast Bay), May 1958, Snyder. CHICHI JIMA: Two, Omura, June 1936, Ikeda; one, Sakai-ura, June 1949, Mead; one, no precise locality, July 1951, Bohart; 13, Omura, "Camp Beach," Apr. and May 1958, Snyder; 10, Miyanohama, "Jack Williams Beach," May-June 1958, Snyder; two, Yatsuse R. (Minato Ko), "General's Beach," Apr. 1958, Snyder; two, Sakai-ura, "Bull Beach," May 1958, Snyder; two, Chihiro-iwa, "Mulberry Beach," Apr. 1958, Snyder; Minami Jima: 13, Long I., May 1958, Snyder.

VOLCANO IS. IWO JIMA: One, Sept. 1945, Dybas.

S. MARIANA IS. AGRIHAN: Two, July 1948, Mead; one, July 1951, Bohart. ALAMAGAN: One, July 1949, Mead. SAIPAN: Two, 1.2 miles east of Tanapag, Sept. 1944, Edgar; two, Nov. 1944, Dybas; one, Ants Valley, June 1946, Oakley; one, Afetna Pt., June 1946, Townes; one, As Mahetog area, Nov. 1944, Dybas; nine, Nov. 1944, Dybas; three, at light, Nov. 1944, Edgar; seven, Nov. 1944, Edgar; one, at light, Jan. 1945, Dybas; 13, at light, Apr. 1945 Dybas; one, at light, May 1945, Dybas; six, Achugau area, sweeping, Jan. 1945, Dybas; two, Talofofo, sweeping vegetation, Jan. 1945, Dybas; one, Laulau Bay, Jan. 1945, Dybas; one, Garapan, Apr. 1946, Krauss; six, no precise locality, Nov. 1944, Hagen. TINIAN: Three, no precise locality, June 1946, Townes; one, Hagoya Lake, June 1946, Townes; two, south end, June 1946, Townes; one, no precise locality, Nov. 1952, Beardsley. ROTA: Two, July 1951, Bohart. GUAM: One, Upi Trail, ex grass, May 1936, Swezey; one, Pt. Oca, at light, May 1945, two, in light trap, three, June 1945, Gressitt and Bohart, one, Dec. 1945, Gressitt; one, Barrigada, Aug. 1945, Wallace; one, Mungmung, in light trap, June 1945, Bohart and Gressitt; one, Agana, May 1945, Bohart and Gressitt; one, airport, Aug. 1945, Dybas, one, June 1946, Townes; three, Mt. Alifan, Apr. 1946, two, Agat, Apr. 1946, two, Talofofo, Apr. 1946, two, Aug. 1952, all by Krauss; one, northern Guam, Apr. 1946, Krauss; one, Anderson Airforce Base, Aug. 1952, Krauss; one,

Mt. Lamlan, Oct. 1952, Krauss; five, Ritidian Point, Oct. 1952, one, Inarajan, Oct. 1957, all by Krauss; one, no precise locality, July 1945, Chaffee.

PALAU. BABELTHUAP: One, Ngerehelong, Sept. 1952, Beardsley; three, East Agalpang, Dec. 1952, Gressitt. KOROR: One, Sept. 1952, Krauss; one, Jan. 1953, Beardsley; one, Apr. 1953, collector unknown; one, Jan. 1954, Beardsley; one, July 1956, McDaniel. NGESEBUS: Two, May 1957, Sabrosky. PELELIU: Three, east coast, Jan. 1948, Dybas; one, Mt. Amiangl, Dec. 1952, Gressitt. ANGAUR: One, Feb. 1948, Dybas.

YAP. RUMUNG: Two, north part, July-Aug. 1950, two, east part, July-Aug. 1950, four, central part, July-Aug. 1950, three, south part, July-Aug. 1950, all by Goss. YAP: One, no precise locality, July-Aug. 1950, Goss, one, Oct. 1952, Krauss; one, Gagil Dist., July-Aug. 1950, Goss; six, central part, July-Aug. 1950, Goss; Kolonia, one, July-Aug. 1950, Goss, one, Mar. 1954, Beardsley; Ruul, two, July-Aug. 1950, Goss; three, July 1956, McDaniel, one, south part, July-Aug. 1950, Goss.

TRUK. WENA (Moen): One, Civ. Ad. Area, at light, Mar. 1949, Potts; one, 0-400 ft., May 1946, Townes; one, 1952, Beardsley.

CAROLINE ATOLLS. ULITHI: One, Falalop, Apr. 1952, Beardsley. SATAWAN: One, Nov. 1952, Beardsley. MOKIL: One, Jan. 1953, Gressitt.

PONAPE. Colonia, one nymph, June-Sept. 1950, Adams, one, Jan. 1953, Clarke; one, Tolenot Pk., June-Sept. 1950, Adams; two, Tolotom, 1,700 ft., June-Sept. 1950, Adams; one, Agric. Expt. Sta., June-Sept. 1950, Adams; one, Not Point, June-Sept. 1950, Adams.

WAKE. WAKE: Four, Nov. 1951, Joyce; six, Nov. 1957, Krauss. PEALE: One, Nov. 1957, Krauss.

MARSHALL IS. ENIWETOK: One, Japtan, May 1946, Townes; 13, Aug. 1956, two, Jan.-Feb. 1957, Tuthill. ELUGELAB: One, sweeping, Jan. 1951, Oshiro. KWAJALEIN: Three, Mar. 1953, Clagg; three, Feb. 1958, Krauss. EBEJE: One, Oct. 1953. UJAE: One, Oct. 1953. WAE: One, Oct. 1953. LAE: Two, Oct. 1953. WOTHO: Three, Wotho I., Oct. 1953, Beardsley. LIB: Three, Oct. 1953. NAMU: Three, Namu I., Oct. 1953; three Kaginen, Oct. 1953. JALUIT: 12, Mejatto, Apr. 1958; three, Pinlep, Apr. 1958; 18, Jabor, Apr. 1958, four, May 1958, all by Gressitt. NAMORIK: One, Namorik I., Sept. 1953. EBON: Three, Ebon I., Sept. 1953.

GILBERT IS. BUTARITARI: 15, Dec. 1957, Krauss. TARAWA: One. Betio, Aug. 1956, Brown; four, Nov. 1957, one, Bikenibeu, Nov. 1957, two, Teaoraoreke, Dec. 1957, three, Bairiki, Nov. 1957, one, Marenanuka, Dec. 1957, all by Krauss.

OCEAN I. BANABA: One, Dec. 1957, Krauss.

Some authors believe the species is originally Australian and it is certainly widely distributed on that continent, from desert and arid environments to sclerophyll forests. Hawaii has many species of *Nabis,* which belong

to two series, a group without a ventral tooth on the male clasper (the simplest shape occurring in *N. capsiformis*) and a group in which there is a prominent ventral tooth on the male clasper. The most generalized clasper possibly belongs in this group to *N. blackburni*. It is interesting to note that there is a second species of *Nabis* in Australia rather darker on the whole than *capsiformis* (although in most collections the two are mixed together) which has a clasper of the *blackburni* type, though rather simpler. This species is probably undescribed.

20. Nabis fasciata Stål.

Nabis fasciata, Kirkaldy, 1901, Wien. Ent. Zeitung **20** (10): 220.

Kirkaldy claimed that this species occurs in this region. "Diese Art ist der *N. perpulchra* Stål aus Afrika (Kaffraria, Abyssinien U. S. W.) sehr ahnlich, aber sie ist ohne Schwierigkeit zu unterscheiden durch die viel feinere Punktirung des Hirtertheils des Pronotums sie stammt von der Philippinen Inseln und Pegu (Palou!)"